

In the Claims:

Please amend the claims as indicated below. This listing of claims replaces all prior versions.

1. (currently amended) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

iteratively computing a probable cross talk signal and, therefrom, producing a plurality of iteratively computed probable cross talk signals; and

calculating the data signal based at least in part upon one of the iteratively computed probable cross talk signals converging toward the superimposed cross-talk signal.

2. (currently amended) The method as recited in claim 1 further comprising iteratively computing a probable desired signal estimate, wherein the probable desired signal ~~estimates are~~ estimate is used in iteratively computing the probable cross talk signal and in calculating the data signal.

3. (original) The method as recited in claim 1 wherein the data signal is a multi-carrier signal.

4. (original) The method as recited in claim 3 wherein the data signal is a discrete multi-tone signal.

5. (canceled)

6. (previously presented) The method as recited in claim 1 wherein the data signal is a Very-High-Speed Digital Subscriber Line signal.

7. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving a symbol block;

obtaining an estimate of symbols in the symbol block;
iteratively calculating an expected value for each symbol in the symbol block and,
therefrom, producing a plurality of iteratively calculated expected values; and
selecting symbol values based on the iteratively calculated expected values
converging toward final expected values for each symbol.

8. (original) The method as recited in claim 7 wherein the calculating includes executing soft cancellation of the estimate or the expected value from a preceding calculation.

9. (original) The method as recited in claim 8 wherein soft cancellation includes subtracting the effect of the estimate from the symbol block to produce an estimate of an interference free value of the input symbol in the symbol block.

10. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving a symbol block;
obtaining an estimate of symbols in the symbol block;
iteratively calculating an expected value for each symbol in the symbol block
including executing soft cancellation of the estimate or the expected value from a
preceding calculation wherein soft cancellation includes subtracting the expected values
from the symbol block to produce an estimate of an interference free value of the input
symbol in the symbol block; and
selecting symbol values based on final expected values for each symbol.

11. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving a symbol block;
obtaining an estimate of symbols in the symbol block;
iteratively calculating an expected value for each symbol in the symbol block, and
including
executing soft cancellation of the estimate or the expected value from a
preceding calculation, and

calculating interference power to account for the uncertainty of the estimate; and
selecting symbol values based on final expected values for each symbol.

12. (original) The method as recited in claim 11 wherein the calculating includes computing a plurality of probable values, the probable values being based at least in part on the calculated interference power and the soft cancellation.

13. (original) The method as recited in claim 12 wherein the calculating includes determining the expected value from the plurality of probable values.

14. (original) The method as recited in claim 13 wherein the symbol block includes primary data signal symbols and superimposed cross talk signal symbols.

15. (original) The method as recited in claim 14 wherein the primary data signal is a discrete multitone signal.

16. (original) The method as recited in claim 15 wherein at least one tone of the multi-tone signal is zeroed to produce better performance of soft cancellation.

17. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving a symbol block including primary data signal symbols and superimposed cross talk signal symbols wherein the primary data signal is a discrete multitone signal and wherein at least one tone of the multi-tone signal is zeroed to produce better performance of soft cancellation and the tones that are zeroed are the ones with the largest interference from the superimposed cross talk signal;

obtaining an estimate of symbols in the symbol block;

iteratively calculating an expected value for each symbol in the symbol block including

executing soft cancellation of the estimate or the expected value from a preceding calculation,

calculating interference power to account for the uncertainty of the estimate,
computing a plurality of probable values, the probable values being based at least in part on the calculated interference power and the soft cancellation,
determining the expected value from the plurality of probable values; and
selecting symbol values based on final expected values for each symbol.

18. (previously presented) The method as recited in claim 14 wherein the primary data signal is a Very-High-Speed Digital Subscriber Line signal.

19. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving a symbol block including primary data signal symbols and superimposed cross talk signal symbols wherein the superimposed cross talk signal is a Home Phone Network Alliance signal;

obtaining an estimate of symbols in the symbol block;

iteratively calculating an expected value for each symbol in the symbol block including

executing soft cancellation of the estimate or the expected value from a preceding calculation,

calculating interference power to account for the uncertainty of the estimate,

computing a plurality of probable values, the probable values being based at least in part on the calculated interference power and the soft cancellation,

determining the expected value from the plurality of probable values; and
selecting symbol values based on final expected values for each symbol.

20. (original) The method as recited in claim 8 wherein a group of at least two symbols are used when performing soft cancellation.

21. (original) A method for removing cross talk interference due to a cross talk source that undesirably interferes with the reception of data being transmitted over a

transmission medium by coupling to the transmission medium, the method comprising:

- receiving an input signal including a first signal that is superimposed on a second signal, the received signal having a symbol block with input symbols that include a first set of symbols associated with the first signal a second set of symbols associated with the second signal;

- producing an estimate for the input symbols;

- subtracting the effects of the input symbols from the received symbol block;

- computing a probability distribution for each of the input symbols, the computing being based at least in part on the estimate;

- calculating a weighted average from the probability distribution, the weighted average indicating a more likely value for the input symbols.

22. (previously presented) The method as recited in claim 21 wherein the computing is based at least in part on a calculated interference power.

23. (previously presented) The method as recited in claim 21 further including outputting the expected values for each of the symbols of the second signal.

24. (previously presented) The method as recited in claim 21 wherein the weighted average is the estimate.

25. (canceled)

26. (previously presented) A method of canceling cross talk interference in a received data signal, the method comprising:

- receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

- iteratively computing a probable cross talk signal; and

- calculating the data signal based at least in part on the iteratively computed probable cross talk signal being computed for a predetermined number of iterations and upon the iteratively computed probable cross talk signal resembling the superimposed cross-talk signal.

27. (currently amended) A method of canceling cross talk interference in a received data signal, the method comprising:

receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

iteratively computing a probable cross talk signal; and

calculating the data signal based at least in part upon said iteratively computed probable cross talk signal resembling the superimposed cross-talk signal and based at least in part on the iteratively computed probable cross talk signal[[s]] converging toward the superimposed cross talk signal.

28. (currently amended) A data communication apparatus adapted to cancel cross talk interference in a received data signal, the apparatus comprising:

means for receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

means for iteratively computing a probable cross talk signal and, therefrom, producing a plurality of iteratively computed probable cross talk signals; and

means for calculating the data signal based at least in part upon one of the iteratively computed probable cross talk signals converging toward the superimposed cross-talk signal.

29. (currently amended) The apparatus of claim 28 further comprising means for iteratively computing a probable desired signal estimate, wherein the computed probable desired signal ~~estimates are~~ estimate is used in iteratively computing the probable cross talk signal and in calculating the data signal.

30. (canceled)

31. (previously presented) A data communication apparatus adapted to cancel cross talk interference in a received data signal, the apparatus comprising:

means for receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

means for iteratively computing a probable cross talk signal; and
calculation means for calculating the data signal based at least in part upon the iteratively computed probable cross talk signal resembling the superimposed cross-talk signal and adapted to calculate the data signal based at least in part on the iteratively computed probable cross talk signal being computed for a predetermined number of iterations.

32. (currently amended) A data communication apparatus adapted to cancel cross talk interference in a received data signal, the apparatus comprising:

means for receiving an input signal that includes a primary data signal and a superimposed cross-talk signal;

means for iteratively computing a probable cross talk signal; and

calculation means for calculating the data signal based at least in part upon the iteratively computed probable cross talk signal resembling the superimposed cross-talk signal and adapted to calculate the data signal based at least in part on the iteratively computed probable cross talk signal[[s]] converging toward the superimposed cross talk signal.